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(71) Applicant: TELIA AB [SE/SE]; Mårbackagatan 11,  
S-123 86 Farsta (SE).

(72) Inventors: ANDERSIN, Mikael; Fatburs Kvarngata 2,  
S-118 64 Stockholm (SE). EMILSSON, Stellan; Grän

31, S-655 94 Karlstad (SE). BLOMKVIST, Håkan;  
Klykvägen 20, S-653 50 Karlstad (SE). GUSTAFSSON,  
Jan; Torpgatan 19, S-653 30 Karlstad (SE). ERIKSSON,  
Jonas; John Ericsson gatan 16, S-652 22 Karlstad (SE).

(74) Agent: SVENSSON, Peder; Telia Research AB, Vitsands-  
gatan 9, S-123 86 Farsta (SE).

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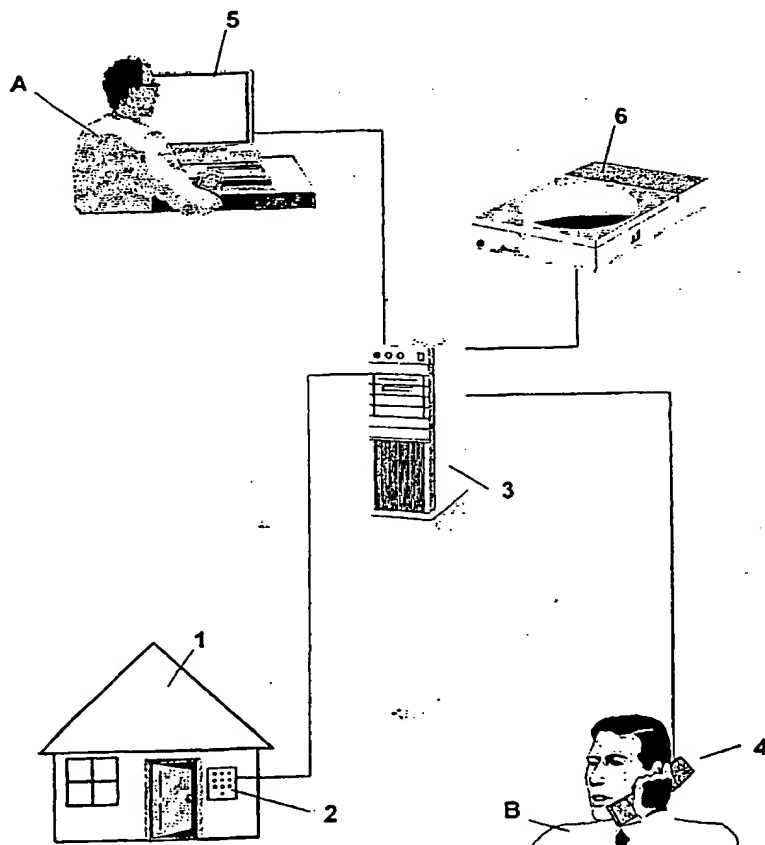
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(54) Title: MANAGEMENT OF PERMIT CODES



(57) Abstract: A procedure and an arrangement to, with a temporary permit code/entry code number, give a visiting person (B) admittance to an installation/plant (1) equipped with code lock (2), at which a permit code server (3) generates a permit code and parallelly distributes the generated permit code to the visiting person (B) and to the code lock (2) of the installation/plant (1). At that is the code lock (2) arranged to give admittance to the installation/plant (1) at entering of said permit code. When the permit code server (3) distributes the permit code to the code lock (2), it preferably also transmits validity information to the code lock (2) regarding the validity of the distributed permit code. Such validity information can refer to for how long time the distributed permit code shall be valid, or the number of enterings in the code lock (2) the distributed permit code shall be valid for.

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## MANAGEMENT OF PERMIT CODES

Technical field

5       The present invention relates to a procedure and an arrangement for management of permit codes intended to be used to give admittance to a plant/premises, for instance a house which is equipped with a code locking system.

10   Background

Nowadays code locking devices are very common, for instance in block of flats or at working places. One problem with such code locks is that the codes normally very seldom are changed, which results in that they  
15 continuously will be known to an ever increasing group of people. For the sake of convenience, the code is frequently disclosed when casual guests shall be admitted. Another problem is that it can be both time-consuming and expensive for a company or a landlord to change codes at a large  
20 number of code locks. A specific problem is to give a person admittance to the plant/premises a limited number of times, or during a limited time.

Summary of the invention

25       With the aim to overcome the above described problems, the present invention consequently relates to a procedure to give a first person admittance to a to plant/premises equipped with code locking system, including the steps that a permit code server generates a permit code, and that the  
30 permit code server parallel distributes the generated permit code to the first person and to the code locks of the plant/premises. At that, the code lock is arranged to give admittance to the plant/premises at entering of said permit code. Preferably this procedure is preceded by a  
35 second person, having admittance to the plant/premises, transmitting a request to the permit code server about

giving the first person admittance to the plant/premises. Together with said request, the second person preferably also transmits information about where the permit code shall be distributed. Another possibility is to transmit  
5 some identity information regarding the first person, by means of which the permit code server derives information about where the permit code shall be distributed. This information can be stored in a database.

10 When the permit code server distributes the permit code to the code lock, it preferably also transmits validity information to the code lock regarding the validity of the distributed permit code. Such validity information can be about how long time the distributed  
15 permit code shall be valid, or the number of enterings in the code lock the distributed permit code shall be valid for. Just for the sake of information, said validity information is preferably also transmitted to the first person in connection with that he/she receives the  
20 generated permit code.

Preferably the permit code is distributed to the first person in form of a text message to a mobile telephone belonging to this first person, over any mobile telephone  
25 system. The mobile telephone number for said mobile telephone is preferably transmitted from the second person to the permit code server in connection with the transmission of request to give the first person admittance to the plant/premises.

30 With the aim to overcome said problems, the present invention also relates to an arrangement for management of a person's admittance to a plant/premises which is equipped with a code lock. In this arrangement, a permit code server  
35 is, from a communication point of view, connected to the code lock of the plant/premises, which permit code server

includes a permit code generator as well as distribution devices arranged to distribute a generated permit code on the one hand to a communication device belonging to the first person, and on the other to said code lock. Further, the code lock includes code entering devices, for instance in form of a key set for entering of PIN-code or a loudspeaker and a voice detector system for detection of a pronounced code. The code lock further is arranged to allow admittance to the plant/premises at entering by said code entering device of a permit code generated and transmitted to the code lock by said permit code server.

The permit code server includes preferably an input port to which a second person, by means of a communication device, can enter a request to the permit code server to give the first person admittance to the plant/premises. Preferably is the second person's communication device connected, from a communication point of view, to the input port of the permit code server via a network. Further is the permit code server preferably arranged to, from said input port, receive information about where a permit code shall be distributed, at which said distribution devices are arranged to transmit the permit code to a communication device which is identified in the information which was received via said input port. Alternatively is the permit code server arranged to, from said input port, receive identity information regarding the first person. The permit code server then includes devices arranged to, depending on said identity information, derive stored information from a database which is connected, from a communication point of view, to the permit code server about where a permit code shall be distributed. Said distribution devices are at that arranged to transmit the permit code to a communication device which is identified in said derived information.

Further, said distribution device is preferably arranged to distribute validity information to the code lock, regarding the validity of the distributed permit code. Such validity information includes for instance  
5 information about for how long the distributed permit code shall be valid, or the number of enterings in the code lock for which the distributed permit code shall be valid. Preferably, said distribution devices are further arranged also to distribute said validity information to the first  
10 person's communication device.

In the arrangement according to the invention said distribution devices are preferably arranged to distribute the permit code to the first person in form of a text  
15 message to his/her communication device. The first person's communication device is for instance a mobile telephone, at which said permit code server is arranged to, from its input port, receive information about the first person's mobile telephone number, and where said  
20 distribution devices at that are arranged to transmit the permit code to said mobile telephone over said mobile telephone system. In another example is the first person's communication device a computer connected to a network, at which said permit code server is arranged to from said  
25 input port receive information about the network address of the computer, at which said distribution devices are arranged to transmit the permit code to said computer over said network.

30 In the arrangement according to the invention, the second person's communication device is, for instance, a mobile telephone, arranged to communicate with the input port of the permit code server over a mobile telephone system. In another embodiment, the second person's  
35 communication device is a computer, arranged to communicate

with the input port of the permit code server over a data communication network.

#### Brief description of the drawing

5 The invention is presented in detail below with reference to the enclosed drawing, where

Figure 1 shows a preferred embodiment of the arrangement according to the present invention.

#### 10 Detailed description of preferred embodiments

The present invention is suited, for instance, for code locks/code locking systems in apartment houses, and makes possible for a tenant to, in a simple way, give a visitor admittance to the house without risking that the  
15 ordinary permit code, i.e. entry code number, is disclosed. The invention consequently is based on that a tenant A via a mobile telephone or a computer connected to Internet can request that a temporary code is transmitted parallel to the person B, i.e. the visitor, who shall pass by a code  
20 lock, and to the electronic code lock. When the visitor B then enters the code by one at the code lock arranged code entering device, the code will be known by the code lock and the front-door can be opened. The invention implies that the security is improved by the code being only  
25 temporary, i.e. it is valid during one in advance defined period of time, or that it only can be used for one in advance defined number of times, for instance one time. The validity information, i.e. how long time, or how many times, the code shall be valid for can either be determined  
30 by the person A when he/she requests that the momentary permit code shall be distributed, or by the permit code generator which generates the permit codes and distributes them to the code lock and the visiting person B.

35 In Figure 1 is shown schematically a preferred embodiment of the arrangement according to the present

invention. In this embodiment, the person B wants admittance to the house 1, and then has to pass a front-door which is equipped with a code lock 2. The plant/premises 1 can also be an enclosed zone where the front-door that is protected by the code lock 2 is a gate. The code lock 2 can be a code lock equipped with keys according to known technology, or a device with microphone and speech recognition means, arranged to detect a pronounced code. The code lock 2 differs from ordinary locks in that it includes a connection to a permit code server 3. In a bigger apartment there may be a plurality of front-doors, each equipped with a code lock, which can be programmed with different or the same codes. If the permit code server is located in the house 1, the code locks 2 are preferably connected to the permit code server 3 via cables. If there instead is a permit code server arranged for a plurality of different houses, it may be suitable to arrange the connection between the permit code server and the code lock, or the locks, via a communication network. For instance can the connection be arranged via radio over a mobile telephone system, such as GSM. In one embodiment, the connection is arranged over Internet, where each code lock has a given IP-address. In addition to that the code lock 2 is arranged to communicate with the permit code server 3, it includes device to receive information from the permit code server 3 and act on basis of this information. The permit code server is preferably arranged to transmit permit codes to the code locks 2, at which the code locks includes means to store the transmitted permit codes and to open the front-door the code lock refers to, at entering of a stored code. The code lock is also arranged to receive validity information and to store this validity information. If a code lock receives information about that a transmitted permit code only shall be valid for instance for an hour, the code lock is arranged to after the expiration of this hour delete the stored permit code and



at that refuse admission through the port in question at entering of said deleted permit code. The code lock 2 can also be arranged to communicate to the permit code server 3. The code lock consequently can report to the permit code server when a permit code has been entered via the code entering device, and a person B is admitted into the house 1, or when anybody has entered a wrong or expired code. Alternative channels for communication between the permit code server 3 and the code lock 2 can, for instance, be a PSTN-modem, SMS or MiniCall.

In the figure of the preferred embodiment is also shown that the visiting person B has a communication device 4, in the figure illustrated as a mobile telephone. Consequently the permit code server 3 is arranged to transmit the temporary permit code to the communication device 4, parallel with that the permit code is distributed to the code lock 2. In the case that the communication device 4 is a mobile telephone, the code is preferably distributed over a mobile telephone network. It is of course also possible that the visiting person B can have the code transmitted to his/her home, or in another place, to a computer connected to Internet. In the case the communication device 4 is a mobile telephone, the permit code is preferably transmitted via a text message, such as SMS, and is preferably accompanied by the validity information that has been transmitted to the code lock. This informs the person B about when he/she at the latest has a chance to be admitted into the house 1, or how many times the person B can get admittance with the same code.

In the figure 1 is also shown how a person A can communicate with the permit code server via a communication device 5. In the illustrated embodiment, this communication device 5 is a computer connected to the permit code server 3 via any communication network. In the cases the permit

code server is located in a house in which the person A is located, the communication between the communication device 5 and the permit code server 3 can be made over an internal, local network. It is of course also possible to  
5 arrange the communication over Internet or over the fixed telephone network. In yet another alternative embodiment, the communication between the person A and the permit code server 3 can be made by a communication device 5 in form of a mobile telephone, over any mobile telephone system.

10

Below is described, by means of an example, how the invention can be utilized. Suppose that the person A is a tenant who is living in the house 1. The person A has a communication device 5, which is connected, or can be  
15 connected/set up, to a permit code server 3 which controls the code lock 2 of the house 1. The code lock 2 is in known way programmed with at least one valid permit code which is known to the tenant A. When the tenant A shall have a visit from a visitor B, it may be inadvisable to disclose the  
20 programmed permit code, especially if it is used by a plurality of tenants in the same house. If the person B, for instance, is a deliveryman who only shall be admitted one time, the person A transmits a message via his/her communication device 5 to the permit code server 3 about  
25 distributing a temporary code to the person B. With this request the person A encloses information about where the permit code shall be distributed. In a house with a plurality of front-doors equipped with code locks, this information can include which code lock (and front-door)  
30 that is intended, and an address for the person B. This address is preferably a GSM-number or an IP-address. When the tenant A in this case wants to give admittance to a deliveryman, the person A in addition encloses validity information to the permit code server 3 that the permit  
35 code only shall be valid for one entering of code. A permit code generator, preferably a random number generator, in

the permit code server after that generates a temporary permit code. Distribution devices arranged in the permit code server, after that attends to that the generated permit code is distributed to the code lock 2 and the communication device 4 which have been identified in the information from the person A's communication device 5. It is realized here that the person A in said information can identify a plurality of code locks 2 and/or a plurality of persons B to whom the permit code shall be distributed.

The code lock 2 receives the generated permit code and stores it in a memory. Also the validity information is transmitted from the permit code server 3 and is stored in memory in the code lock 2. The permit code is transmitted to the person B to his/her communication device 4, and is presented to the person B in a suitable way, for instance on a display in form of a text message. Preferably is also the validity information that is transmitted from the permit code server 3 presented. The person B is by that informed about which permit code he/she has to enter at the code lock 2 to be admitted into the house 1. When the person B enters the generated permit code at the code lock 2, the person B consequently is admitted at the same time as the code lock 2 detects that the permit code after that shall be invalid. Consequently, the generated permit code is deleted from the code lock 2, at which the risk is minimized that unauthorized persons shall be admitted into the house 1.

In one alternative embodiment, A need not explicitly indicate the address for where the permit code shall be distributed to reach the person B. Instead is indicated a name or a code at the communication device 5 and is transmitted to the permit code server 3. This will in its turn, by means said name or code, derive the correct address from a database 6, connected to the permit code

server 3. Such a procedure can be suitable where anybody, for instance a receptionist, manages a large number of admittances to the domains 1 of a company. In one embodiment is also the validity information preselected and stored in the database 6, together with the address for the communication device to which the permit code shall be distributed.

It should also be realized that the permit code which is generated in the permit code server 3 need not be temporary. It is also possible to conceive that a landlord A distributes new semi-stationary permit codes in the same way to both his/her tenants B and the code lock 2 of the house 1.

One advantage with the arrangement according to the present invention, where tenants A are given possibility to via communication devices 5, give temporary visitors B a temporary permit code, is that the permit code server 3 can be arranged also to log who has requested that a temporary code shall be distributed. At abuse, the permit code server 3 consequently can deny tenants A to supply temporary permit codes.

A large number of embodiments are obvious for the arrangement according to the present invention. The invention, however, is only limited by the enclosed patent claims.

## PATENT CLAIMS

1. Procedure to give a first person (B) admittance to a plant/premises (1) equipped with code lock (2), including  
5 the steps that:
- a permit code server (3) generates a permit code;
  - the permit code server (3) parallel distributes the permit code to the first person (B) and to the code lock (2) of the plant/premises, at which;
  - 10 - the code lock (2) is arranged to give admittance to the plant/premises (1) at entering of said permit code.
2. Procedure as claimed in patent claim 1, where a second  
15 person (A), who has admittance to the plant/premises (1), in a first phase transmits a request to the permit code server (3) about giving the first person (B) admittance to the plant/premises (1).
- 20 3. Procedure as claimed in patent claim 2, where said second person (A), together with said request, transmits information about to where the permit code shall be distributed.
- 25 4. Procedure as claimed in patent claim 2, where said second person (A), together with said request, transmits identity information regarding the first person (B), by means of which identity information the permit code server (3) derives information about to where the permit code  
30 shall be distributed.
5. Procedure as claimed in patent claim 3 or 4, where the permit code server (3) transmits validity information to the code lock (2) regarding the validity of the distributed  
35 permit code.

6. Procedure as claimed in patent claim 5, where said validity information includes information about how long time the distributed permit code shall be valid for.

5 7. Procedure as claimed in patent claim 5, where said validity information includes information about the number of enterings in the code lock (2) which the distributed permit code shall be valid for.

10 8. Procedure as claimed in any of the patent claims 5-7, where said validity information also is distributed to the first person (B).

15 9. Procedure as claimed in any of the previous patent claims, where the permit code server's distribution of the permit code to the first person (B) is made in form of a text message to a mobile telephone (4) belonging to the first person (B).

20 10. Procedure as claimed in patent claim 9 in combination with patent claim 3, where the second person's (A) request to the permit code server (3) is transmitted together with the first person's (B) mobile telephone number.

25 11. Arrangement for management of a person's (B) admittance to a plant/premises (1) which is equipped with code lock (2), in which arrangement a permit code server (3) is, from a communication point of view, connected to said code lock (2), which permit code server (3) includes a  
30 permit code generator and distribution devices arranged to distribute one by the permit code generator generated permit code to a communication device (4) belonging to a first person (B), and said code lock (2), which code lock (2) includes code input device and is arranged to allow  
35 admittance to the plant/premises (1) at input by the code

input device of a permit code generated and transmitted to the code lock (2) by said permit code server (3).

12. The arrangement as claimed in patent claim 11, where said permit code server (3) further includes an input port arranged to, from a second person's (A) communication device (5), receive a request to the permit code server (3) about giving the first person (B) admittance to the plant/premises (1).

13. The arrangement as claimed in patent claim 12, where said permit code server (3) is arranged to, from said input port, receive information about to where a permit code shall be distributed, and where said distribution devices are arranged to transmit the permit code to a communication device (4) which is identified in said received information.

14. The arrangement as claimed in patent claim 12, where said permit code server (3) is arranged to, from said input port, receive identity information regarding the first person (B), where said permit code server includes devices arranged to, by means of said identity information, derive information in a database (6) which is, from a communication point of view, connected to the permit code server (3), about to where a permit code shall be distributed, and where said distribution devices are arranged to transmit the permit code to a communication device (4) which is identified in said derived information.

15. The arrangement as claimed in patent claim 13 or 14, where said distribution devices are arranged to transmit validity information to the code lock (2) regarding the validity of the distributed permit code.

16. The arrangement as claimed in patent claim 15, where said validity information includes information about how long time the distributed permit code shall be valid for.

5 17. The arrangement as claimed in patent claim 15, where said validity information includes information about the number of enterings in the code lock (2) which the distributed permit code shall be valid for.

10 18. The arrangement as claimed in any of the patent claims 15-17, where said distribution devices are arranged to also distribute said validity information to the first person's (B) communication device (4).

15 19. The arrangement as claimed in any of the patent claims 11-18, where said distribution devices are arranged also to distribute the permit code to the first person (B) in form of a text message to the first person's (B) communication device (4).

20

20. The arrangement as claimed in patent claim 13, where the first person's (B) communication device (4) is a mobile telephone, at which said permit code server (3) is arranged to, from said input port, receive information about the  
25 first person's (B) mobile telephone number, and where said distribution devices at that are arranged to transmit the permit code to said mobile telephone (4) over a mobile telephone system.

30 21. The arrangement as claimed in patent claim 13, where the first person's (B) communication device (4) is a computer connected to a network, at which said permit code server (3) is arranged to, from said input port, receive information about the network address of said computer, and  
35 where said distribution devices at that are arranged to



transmit the permit code to said computer over said network.

22. The arrangement as claimed in any of the patent claims  
5 20 and 21, where the second person's (A) communication  
device (5) is a mobile telephone, arranged to communicate  
with the input port of the permit code server (3) over a  
mobile telephone system.
- 10 23. The arrangement as claimed in any of the patent claims  
20 and 21, where the second person's (A) communication  
device (5) is a computer, arranged to communicate with the  
input port of the permit code server over a data  
communication network.

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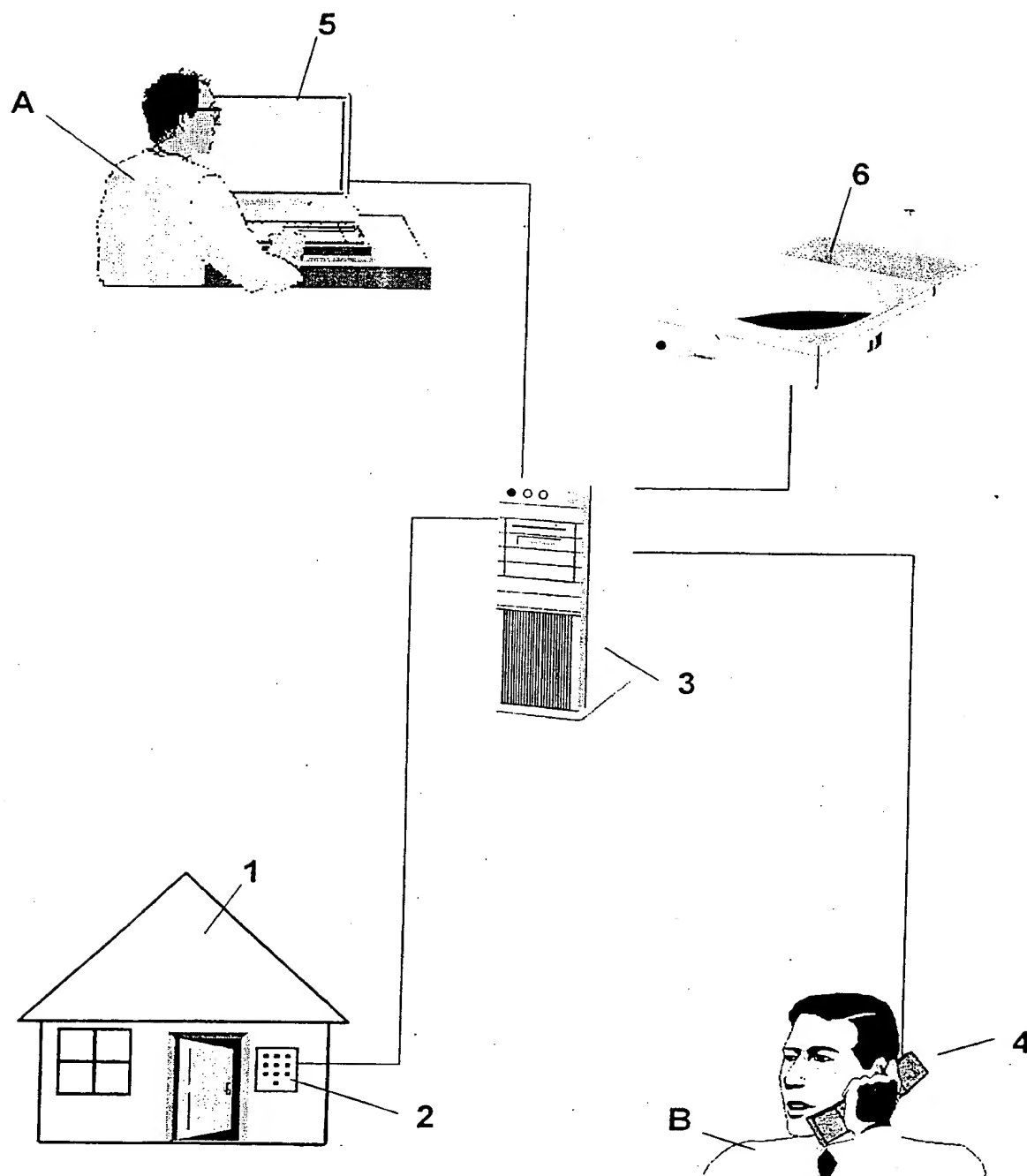


Figure 1

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/00186

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G07C 9/00, E05B 49/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G07C, E05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

30/04/01

International application No.

PCT/SE 01/00186

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